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REMARKS

In the final Office Action claims 35-39, 43, and 44 are pending and rejected. Herein claims 35-39, 43 and 44 are amended and new claims 45-47 are added.

The present Amendment After Final is intended to place the application in condition for allowance, avoid raising additional issues and not require any additional searching or application of newly identified prior art. Applicants respectfully request entry and favorable consideration of the remarks and amendments tendered herewith.

CLAIM REJECTIONS UNDER 35 U.S.C. §101

Claims 43 and 44 stand rejected as directed to non-statutory subject matter.

Herewith Applicant amends claims 43 and 44 to render said subject matter statutory by affirmative recitation of a computer readable medium for storing instructions encoded to perform a method (i.e., process claims).

CLAIM REJECTIONS UNDER 35 U.S.C. §112

Claims 35-39 stand rejected under 35 U.S.C. §112, first paragraph.

Applicant herewith amends the rejected claims to utilize language clearly reflected in the specification as filed (and pursuant to principles of inherency).

Claims 35-39, 43 and 44 stand rejected under 35 U.S.C. §112, second paragraph.

Applicant herewith amends the rejected claims to utilize language clearly reflected in the specification as filed (and pursuant to principles of inherency) and to affirmatively recite the computer readable medium, respectively.

However, Applicant respectfully asserts that certain of the terms utilized in the rejected claims are in fact supported in the specification as filed. For example, from the application as filed (page 16, line 31 to page 18, line 16):

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Next, microcomputer circuit 58 analyzes the recorded flow rate signal and the electrical activity signal to detect a cardiac condition (186). The recorded data, representing the blood flow velocity through the coronary sinus as well as electrical activity within the heart, is useful in detecting a variety of cardiac conditions. For example, in one configuration microcomputer circuit 58 analyzes the recorded data to monitor and detect long-term ischemic heart disease. In this configuration, microcomputer circuit 58 examines the blood flow over a period of time and determines whether the blood flow through the coronary sinus has gradually degraded. Microcomputer circuit 58 can further examine the recorded electrical activity signal to detect whether a thrombus has occluded a coronary artery or whether a myocardial infarction is pending. Microcomputer circuit 58 can detect these particular cardiac conditions by sensing a drop in blood flow through the coronary sinus followed closely by an elevation in the ST segment of the heartbeat. In order to detect the above-described cardiac conditions, microcomputer circuit 58 employs a variety of techniques to analyze the recorded data. For example, microcomputer circuit 58 can calculate slopes for the flow rate signal and the electrical activity signal to detect sharp deviations. In addition, microcomputer circuit 58 can compare the current values of the flow rate signal and the electrical activity signal to predetermined trigger points. Microcomputer circuit 58 can also perform trend analysis on the recorded data to determine whether the flow rate signal and the electrical activity signal have gradually changed over an extended period of time.

If microcomputer circuit 58 detects the occurrence of a cardiac condition, IMD 10 delivers an alarm to the patient (188). In one configuration, IMD 10 provides an audio alarm to warn the patient that a cardiac condition has been detected such as an impending myocardial infarction. In another configuration, IMD 10 provides a muscle stimulant to the patient. In addition, microcomputer circuit 58 can initiate drug therapy by controlling a drug pump (not shown) to deliver a prescribed drug, such as a thrombolytic drug designed to dissolve any thrombus that may be occluding a coronary artery (189). Microcomputer circuit 58 may also configure the counters within digital controller/timer circuit 74 to initiate prophylactic arrhythmia pacing of heart 8.

Figure 7 shows a trend curve 194 that graphically illustrates the mean blood flow velocity provided by flow sensor 22 as a function of time. Curve 190 illustrates a gradual drop in blood flow through coronary sinus over an extended period of time, which is indicative of long-term progression of either ischemic heart disease

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or a coronary sinus thrombosis. Upon crossing a trigger point 190, microcomputer circuit 58 activates an alarm indicating a detected cardiac condition. Trigger point 190 can be a programmable flow rate threshold measured in milliliters per minute, for example. Alternatively, trigger point 190 can be a programmable percentage drop, such as 25%, from a maximum of the mean flow rate of the blood through the coronary sinus as sensed by flow sensor 22.

Figure 8 shows curves 196 and 197 that graphically illustrate the mean blood flow velocity signal from flow sensor 22 and the ST elevation trend sensed from heart 8, respectively. Curves 196 and 197 illustrates a sharp drop in blood flow through the coronary sinus followed closely by a sharp increase in the elevation of the ST segment of the electrocardiogram. More specifically, curve 196 drops below trigger point 200 at a time T1. Within a short period of time ΔT , such as 1 to 3 seconds, curve 197 rises over the trigger point 201 at a time T2. The sharp drop in mean blood flow through the coronary sinus followed closely by an elevation in the ST segment indicates that a thrombus has likely occluded a coronary artery and an impending myocardial infarction is likely. (emphasis added.)

CLAIM REJECTIONS UNDER 35 U.S.C. §102

Claims 35-38, 43 and 44 stand rejected as being anticipated under 35 U.S.C. §102(b) by Soykan et al. ("Soykan").

Applicant respectfully asserts that the rejection is traversed upon entry of the fully-executed Declaration (and exhibit) submitted herewith pursuant to 37 CFR 1.131. That is, the presently claimed subject matter was invented by Applicant prior to the filing date of Soykan. Applicant respectfully requests that the Examiner, upon receipt of the fully-executed Declaration, withdraw the present ground of rejection so the claimed invention may pass to timely issuance as U.S. Letters Patent.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action

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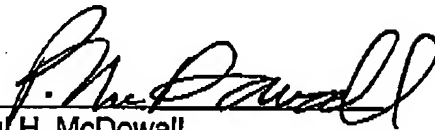
to that effect is courteously solicited so that the claimed invention may proceed to timely issuance as U.S. Letters Patent.

The Examiner is invited to contact the undersigned to discuss any issues related to the present application.

Respectfully submitted,

Date:

23 May 05



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